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AN OVERVIEW TO *CENTAUREA* s.l. (ASTERACEAE) BASED ON HERBARIUM SPECIMENS OF ISTE

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SUMMARY

In this study; a list of the *Centaurea* L. taxa kept in (ISTE) "Herbarium of Faculty Pharmacy, University of Istanbul" is given. The genus *Centaurea* is the third largest genus in terms of species number in Turkey. There are 217 species (146 endemics), 36 subspecies (22 endemics), 28 varieties (16 endemics) totally 255 taxa and endemism ratio is 66.8 %. ISTE has an important *Centaurea* collection with 146 species (67 endemics), 28 subspecies (18 endemics), 20 varieties (9 endemics) totally 171 taxa (83 endemics). The collection also contains 16 European species. Basic chromosome numbers of the genus were reported as x = 6, 7, 8, 9, 10, 11, 12, 13, 15. The list which given in this paper contains; ISTE specimens with voucher numbers, endemism, and chromosome numbers.

ÖZET

Bu çalışmada İstanbul Üniversitesi Eczacılık Fakültesi Herbaryumu'nda (ISTE) bulunan *Centaurea* L. taksonlarının listesi verilmiştir. *Centaurea* cinsi tür sayısı bakımından Türkiye'deki 3. büyük cinstir. Türkiye'de 217 tür (146 endemik), 36 alttür (22 endemik), 28 varyete (16 endemik) toplam 255 taksona sahiptir ve endemizm oranı % 68'dir. ISTE 146 tür (68 endemik), 28 alttür (18 endemik), 20 varyete (9 endemik) toplam 171 taxon (83 endemik) ile önemli bir *Centaurea* koleksiyonuna sahiptir. Bu koleksiyon aynı zamanda Avrupa'dan toplanmış olan 16 adet taksonu da içerir. Cinsin temel kromozom sayısı x = 6, 7, 8, 9, 10, 11, 12, 13, 15 olarak rapor edilmiştir. Bu yayında verilen liste; ISTE herbaryumunda bulunan örnekleri, toplayıcı numaraları, endemizm durumları ve kromozom sayıları ile birlikte içermektedir.

Key words *Centaurea*, chromosome number, ISTE, Turkey

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INTRODUCTION

The herbarium of the Faculty of Pharmacy of Istanbul University (ISTE) is founded in 1945. It contains research collection of about 100000 vascular plant specimens. It is a regional university herbarium with mainly based on Turkish specimens collected Anatolia and European Turkey. Author worked in the ISTE Herbarium during 2011-2013 and examined 1150 *Centaurea* L. specimens for this review. As a result of this examination a check-list of the *Centaurea* taxa kept in the ISTE herbarium has been prepared.

The genus *Centaurea* L. (Asteraceae) consists of more than 400 species from all over the world (14, 41, 46). Recently, *Centaurea* L. has been divided into four genera which are *Centaurea*, *Rhaponticoides* Vaill., *Psephellus* Cass. and *Cyanus* Mill. (22, 23, 47). The genus *Centaurea* was previously revised by Wagenitz (1975) for the Flora of Turkey. According to Wagenitz (1975) Turkey is one of the main centers of diversity for the *Centaurea* and the genus is the third largest genus in terms of species number. In the Flora of Turkey; 172 plus six imperfectly known species of *Centaurea* were accepted (46). Since than many new taxa have been described There are 214 species (143 endemics), 36 subspecies (22 endemics), 28 varieties (16 endemics) totally 255 taxa and endemism ratio is 66.8 % in Turkey (9, 24, 38, 39, 40, 46).

Aim of the study is giving a list of the *Centaurea* s.l. taxa housed in the ISTE herbarium with endemism, and chromosome numbers.

MATERIALS AND METHODS

Totally 1150 *Centaurea* specimens deposited in ISTE investigated and recorded to ISTE Information System by author. Revised and identificated *Centaurea* taxa are listed alphabetical order with ISTE number. Endemics taxa, abbreviated as “e”, are mentioned according to Flora of Turkey and East Aegean Islands (9, 24, 46) and check-lists (38, 39, 40). Taxa which collected from outside of Turkey are written underlined. Chromosome numbers of the taxa also given based on the relavent references.

RESULTS

The List of *Centeurea* Taxa in ISTE Herbarium

e ***C. acicularis*** Sm. var. ***urvillei*** Boiss.
ISTE 73826.
2n = 20 (Georgiadis and Chris., 1984).

C. aegialophila Wagenitz
ISTE 9788, 22148, 74743.
2n = 22 (Hellwig, 1994).

C. aggregata Fisch. & Mey. ex DC. subsp. ***agregata***
ISTE 79440, 83243, 93428, 94413, 96873, 99175, 99180, 99184.
2n = 18 (Bakhshi Khaniki 1996).
e subsp.***albida*** (C. Koch) Bornm.
ISTE 86101.

C. alba L.
ISTE 3276, 3277.
2n = 4x = 36 (Bancheva and Greilhuber, 2006),
2n = 18 (Hellwig, 1994). This specimen collected from Croatia.

e ***C. albonitens*** Turrill
ISTE 4910, 72736, 79658.
2n = 18 (Garcia-Jacas et al., 1998b).

e ***C. amaena*** Boiss. & Bal.
ISTE 72645.

e ***C. amanicola*** Hub.-Mor.
ISTE 45749, 97026.
2n = 18 (Gardou, 1975).

e ***C. amasiensis*** Bornm.
ISTE 45997.

C. amplifolia Boiss. & Heldr.
ISTE 4150, 30115, 41710, 63639, 69760.

e ***C. antiochia*** Boiss. var. ***antiochia***
ISTE 49936, 52163, 78056, 93295, 93316, 93317.
2n = 20 (Koçyiğit and Bona, 2013).
e var. ***praealta*** (Boiss. & Bal.) Wagenitz
ISTE 39940.
2n = 20 (Kültür, 2010).

e ***C. antitauri*** Hayek
ISTE 37550.
2n = 16 (Romaschenko et al., 2004),
n = 8 (Gardou, 1975).

e ***C. aphrodisea*** Boiss.
ISTE 45987, 100949.

e ***C. appendicigera*** C. Koch
ISTE 50903, 61081, 69220.

C. arenaria Bieb. ex Willd.
ISTE 13978, 45974.
2n = 4x = 32 (Bancheva and Greilhuber, 2006); **2n** = 36 (Kuzmanov et al. 1979).

e ***C. arifolia*** Boiss.
ISTE 93307, 99212.
2n = 20 (Koçyiğit and Bona, 2013).

e ***C. armena*** Boiss.
ISTE 86610, 57097.

C. athoa DC.
ISTE 20813, 70196a, 71120, 63565, 64410.
2n = 20 (Uysal et al., 2009).

e ***C. austro-anatolica*** Hub.-Mor.
ISTE 40695, 72542.

C. axillaris Willd.
ISTE 3278.

C. babylonica (L.) L.
ISTE 52589, 83130, 83132.
2n = 16 (Uysal et al., 2009).

C. balsamita Lam.
ISTE 60391, 72748, 72753.
2n = 26 (Bakhshi Khaniki, 1996).

C. behen L.
ISTE 31010, 41316, 42441, 42458, 95210, 95232.
2n = 34 (Romaschenko et al., 2004).

C. bornmuelleri Hausskn. Ex Bornm.
ISTE 82731, 97076, 97077.

e ***C. bourgaei*** Boiss.
ISTE 49059, 58795.

e ***C. brevifimbriata*** Hub.-Mor.
ISTE 82777, 95142, 95156.

C. bruguierana (DC.) Hand.-Mazz.
ISTE 26945.
2n = 20 (Bakhshi Khaniki, 1995a); **2n** = 20 + 0-3B (Garcia-Jacas, 1998b).

C. cadmea Boiss.
e subsp. ***cadmea***
ISTE 48926.
e subsp. ***pontica*** Wagenitz ex Köse et Ocak
ISTE 95840

C. calcitrapa L.
subsp. ***calcitrapa***
ISTE 40346, 49953, 99215.
2n = 20 (Hellwig, 1994; Kamel, 2004).
e subsp. ***cilicica*** (Boiss. & Bal.) Wagenitz
ISTE 66197, 83132a, 99171, 99172, 99173.

e ***C. calolepis*** Boiss.
ISTE 45995, 48946.
2n = 18 (Romaschenko et al., 2004).

C. carduiformis DC.
subsp. ***carduiformis*** var. ***carduiformis***
ISTE 455, 12859, 12903, 13385, 35218, 37553, 37772, 50877, 66896, 67018, 67023, 69155, 69165, 69169, 69598, 69601, 82658, 86260, 88512, 88597, 99191, 99198, 99200.
2n = 20 (Tonian, 1980).
var. ***thrinciifolia*** (DC.) Wagenitz
ISTE 72734, 86376, 99202.
subsp. ***orientalis*** Wagenitz
ISTE 41172.

C. cariensis Boiss. subsp.
e ***longipapposa*** Wagenitz
ISTE 32642, 35429.
e subsp. ***maculiceps*** (O. Schwarz) Wagenitz
ISTE 40596, 40640, 49737, 49742, 51335, 68406, 72903, 72922, 82470. **2n** = 36 (Georgiadis and Christodoulakis, 1984).
e subsp. ***microlepis*** (Boiss.) Wagenitz
ISTE 32623.

C. cassia Boiss.
ISTE 49935, 83174, 93303, 93310, 93423, 94413.
2n = 18 (Koçyiğit and Bona, 2013).

e ***C. cataonica*** Boiss. et Hausskn.
ISTE 49944, 90114.
2n = 18 (Romaschenko et al., 2004).

C. ceceriniana Boiss. & Heldr.
ISTE 3279.

C. cheiranthifolia Willd.
var. ***cheiranthifolia***
ISTE 4833, 26215, 55447, 60873, 84490, 86086, 86939, 87355, 89894.
2n = 18 (Gagnidze et al., 2006).
var. ***purpurascens*** (DC.) Wagenitz
ISTE 26215a, 45307, 54747, 54756, 67057, 85318, 85321, 85605, 87223, 87354, 89179, 89411, 89486, 89725, 89764, 89781, 89849, 89891, 89902.
2n = 16 (Bakhshi Khaniki, 1995b).
C. cheirolopha (Fenzl) Wagenitz
ISTE 5264, 37220, 37622, 42433, 49946, 62076, 68303, 73411, 78032, 81604, 82830, 87955, 93298, 93299, 93314, 93315, 95086, 99214.
2n = 18 (Romaschenko et al., 2004).

C. consanguinea DC.
ISTE 90274.

C. coronopifolia Lam.
ISTE 45502.
2n = 26 (Garcia-Jacas et al., 1997).

C. cuneifolia Sm.
ISTE 12206, 13531, 14564, 20769, 30215, 43496, 45507, 45855, 45983, 52760, 57260, 64400, 67475, 67484, 67510, 68296, 69818, 69886, 69930, 69942, 70970, 70977, 74343, 92330, 92236, 92290.
2n = 2x = 18 (Bancheva and Greilhuber, 2006).

C. cyanus L.
ISTE 457, 458, 459, 460, 461, 2578, 6003, 6416, 10867, 10973, 12684, 13144, 14547, 17778, 19515, 19836, 20652, 21556, 21557, 22386, 24363, 24765, 25876, 28248, 31755, 31979, 37376, 38062, 44524, 47048, 48722, 48928, 50348, 51393, 51538, 53502, 56264, 64137, 71915, 73952, 98336, 98364.
2n = 24 (Georgiadis and Christ. 1984, Hellwig, 1994, Martin et al., 2009).

C. cynarocephala Wagenitz
ISTE 93429.

C. dealbata Willd.
ISTE 89402, 93807.

C. depressa Bieb.
ISTE 462, 4242, 6199, 6976, 9460, 11699, 11462, 13825, 14100, 14105, 15246, 18020, 21874, 21973, 22654, 23612, 23613, 24675, 24735, 28559, 29452, 32164, 32667, 32684, 32729, 32865, 32873, 33065, 33433, 36081, 36088, 36095, 38064, 38083, 39378, 39733, 44557, 44617, 45387, 57982, 58210, 60632, 62905, 65143, 68382, 70612, 70616, 72751, 72752, 74267, 78110, 83653, 84209, 84495, 85507, 86352, 88719, 93427, 96895, 99186, 99194.
2n = 16 (Garcia-Jacas et al., 1997).

e ***C. derderiifolia*** Wagenitz
ISTE 23131.
2n = 18 (Uysal et al., 2009).

C. diffusa Lam.
ISTE 3463, 2702, 4159, 10374, 13300, 13820, 14684, 18157, 34384, 40369, 42468, 58395, 67164, 82257, 82306, 93304.
2n = 16 (Bancheva and Greilhuber, 2006; Morton, 1981); 36 (Kuzmanov et al., 1979); 18 (Kuzmanov et al., 1981).

e ***C. drabifolia*** Sm.
subsp. ***austro-occidentalis*** Wagenitz
ISTE 26483, 26693, 30368, 59565b.
2n = 20 (Uysal et al., 2009).
e subsp. ***cappadocica*** (DC.) Wagenitz
ISTE 40477, 41002, 45513, 74530, 75971, 75972, 86238, 99203, 99208, 99209, 99552.
2n = 18 (Uysal et al., 2009).
e subsp. ***detonsa*** (Bornm.) Wagenitz
ISTE 12888, 12926, 35475, 35690, 54789, 62967, 69548, 72919, 82509, 82548, 82670, 82706, 86407, 86289, 87918, 88113, 88570, 88579, 90087, 99205.
2n = 4x = 36 (Uysal et al., 2009); 54 (Garcia-Jacas et al., 1997).
e subsp. ***drabifolia***
ISTE 625, 626, 20894, 59565a, 67234.

e ***C. drabifolioides*** Hub.-Mor.
ISTE 96931

e ***C. elazigensis*** Kaya & Vural
ISTE 84026 (Holotype).

e ***C. ensiformis*** P.H. Davis
ISTE 44938, 58618, 68393, 63384, 72916, 72927, 72937.

C. erivanensis (Lipsky) Bordz.
ISTE 85599.

e ***C. fenzlii*** Reichardt
ISTE 45312, 95211.

e ***C. foliosa*** Boiss. & Kotschy
ISTE 99101.

C. gigantea Schultz Bip. ex Boiss.
ISTE 41318.

C. glastifolia L.
ISTE 18321, 33070, 33398, 41018, 47403, 55196, 57229, 59338, 65901, 82553, 85136, 85782, 87398, 88997, 89122, 89629, 95274, 99201, 99210.
2n = 4x = 36 (Garcia-Jacas et al., 1998a).

e ***C. haradjianii*** Wagenitz
ISTE 42446.

e ***C. helenioides*** Boiss.
ISTE 14230, 33277.

e ***C. hermannii*** F. Hermann
ISTE 4067, 4072, 13099, 18103, 22305, 22542, 26200, 30114, 31926, 31945, 31949, 35121, 63002, 80922, 92661, 98372.
2n = 18 (Hellwig, 1994; Gürdal and Özhatay, 2011).

e ***C. hierapolitana*** Boiss.
ISTE 48924.

e ***C. huber-morathii*** Wagenitz
ISTE 90846.

C. hyalolepis Boiss.
ISTE 49939, 93305, 93306.
2n = 20 (Bakhshi Khaniki, 1995b; Koçyiğit and Bona, 2013);
n = 11 (Ghaffari and Chariat-Panahi, 1985).

C. hypoleuca DC.
ISTE 4661, 4695, 9028, 9043, 15363, 36989, 37102, 38474, 66305, 66920, 67136, 74610, 77584, 86914, 87130, 91147, 98138.

C. iberica Trev. ex Sprengel
ISTE 453, 454, 463, 3500, 4109, 11684, 11746, 11804, 13295, 13598, 14009, 14458, 14479, 14779, 15530, 18170, 18513, 23234, 25911, 26337, 26554, 35160, 38262, 41669, 45873, 46904, 47464, 50709, 50895, 60678, 63732, 67208, 74177, 76479, 76908, 77368, 78057, 85830, 88988, 98061, 99177, 99187.
2n = 16+ 2B (Bakhshi Khaniki, 1995a), 20 (Hellwig, 1994, Garcia-Jacas et al., 1997).

C. inermis Velen.
ISTE 3456, 4080, 4081, 4082, 4086, 30311, 42471, 46868, 67162, 69638, 77328, 79652.

e ***C. inexpectata*** Wagenitz
ISTE 18448, 33651, 45467, 45647, 48103.
2n = 22 (Uysal & al. 2009).

e ***C. isaurica*** Hub.-Mor.
ISTE 97114.
2n = 18 (Romaschenko et al., 2004).

C. jacea L.
ISTE 464, 465, 466, 467, 7328, 14220, 16025, 16026, 49865, 56265.
2n = 44 (Bancheva and Greilhuber, 2006; Morton, 1981).

C. karduchorum Boiss.
ISTE 58517.

e ***C. kilaea*** Boiss.
ISTE 2993, 6789, 11628, 11866, 11922, 15573, 16106, 26371, 45854, 48961, 64942, 65887, 65888, 67215, 69845, 70889, 70914.
2n = 4x = 36 (Meriç et al., 2010; Gürdal and Özhatay, 2011).

C. kotschyi (Boiss. & Heldr.) Hayek
e var. ***decumbens*** Wagenitz
ISTE 35748.

2n = 4x = 36 (Romaschenko et al., 2004).
var. ***kotschyi***
ISTE 45503, 50874.
2n = 4x = 36 (Uysal et al., 2009).
var. ***persica*** (Boiss.) Wagenitz
ISTE 83279.
2n = 4x = 36 (Uysal et al., 2009).

e ***C. kurdica*** Reichardt
ISTE 41380, 58102.
2n = 18 (Romaschenko et al., 2004).

e ***C. lanigera*** DC.
ISTE 86502, 88138, 90671, 90835.

e ***C. leptophyla*** (C. Koch) Tchihat.
ISTE 67050.

e ***C. luschaniana*** Heimerl
ISTE 72348.

e ***C. lycaonica*** Boiss. et. Heldr.
ISTE 97108.
2n = 18 (Martin et al., 2009).

e ***C. lycopifolia*** Boiss. & Kotschy
ISTE 7031, 40013, 42440, 49945, 66017, 62267, 82477a, 82834, 92801, 92889, 92929, 92961, 93300, 93311, 93312, 93313.
2n = 4x = 36, (Uysal et al., 2009).

e ***C. lydia*** Boiss.
ISTE 44525.
2n = 40 (Garcia-Jacas et al., 1997).

C. macrocephala Muss. Puschk. Ex Willd.
ISTE 18341, 33378, 33834, 87057, 89605.
2n = 2x = 18 (Garcia-Jacas et al., 1998a).

C. maculosa Lam.
ISTE 56266.
2n = 18 (Dambolt and Matthas, 1975).

e ***C. mathiolifolia*** Boiss.
ISTE 22853, 24883, 24929, 27928, 27953, 28072, 29082, 44449, 70464.

C. melitensis L.
ISTE 468.
2n = 24 (Natarajan, 1981, Hellwig, 1994, Vogt and Oberprieler, 2008).

C. montana L.
ISTE 469, 56267.
2n = 24 (Krähenbühl and Küpfer, 1992).

e ***C. mucronifera*** DC.
ISTE 68714, 79441, 81533, 82556, 82616, 87875.

C. nemecii Náb.
ISTE 46774.
2n = 2x = 18 (Garcia-Jacas et al., 1998b).

e ***C. nerimaniae*** Ş. Kültür
ISTE 46386, 82472 (Type), 84007.
2n = 20 (Kültür, 2010).

C. nervosa Willd.
ISTE 470.
2n = 2x = 22 (Bancheva and Greilhuber, 2006).

C. nigra L. subsp. ***nigra***
ISTE 79429.
2n = 44 (Morton, 1981).

C. nigrescens Willd.
ISTE 94904.
2n = 4x = 44 (Bancheva and Greilhuber, 2006).

C. nigrifimbria (C. Koch) Sosn.
ISTE 48376, 50107, 87107, 89481.

e ***C. odyssei*** Wagenitz
ISTE 70056, 70075, 70101, 70108, 70180, 71094, 72492.
2n = 18 (Uysal et al., 2009).

e ***C. olympica*** C. Koch
ISTE 45996.

C. paniculata L.
ISTE 471, 472.
2n = 18 (Natarajan, 1981).

C. patula DC.
ISTE 473, 474, 25268, 50779, 69610. **2n** = 14 (Garcia-Jacas et al., 2006).

e ***C. pecho*** Albow
ISTE 66990.

C. pelia DC.
ISTE 3280.
2n = 18, x = 9 (Georgiadis, 1983).

e ***C. pergamacea*** DC.
ISTE 75284, 95200.

C. persica Boiss.
ISTE 85650.
n = 10 (Ghaffari, 1999).

e ***C. pichleri*** Boiss.
subsp. ***extrarosularis*** (Hayek & Siehe) Wagenitz
ISTE 35777, 50890, 62341, 88388.
subsp. ***pichleri***
ISTE 8123, 8879, 9182, 9345, 9624, 20221, 21667, 28528, 28539, 28559a, 29023, 29107, 29337, 32550, 32714, 35440, 44375, 48917, 49061, 62797, 69611, 88549, 88649, 90338, 99190, 99207.
2n = 4x = 44 (Bancheva and Greilhuber 2006).

C. pinardii Boiss.
ISTE 46246, 48923.
2n = 16 (Romaschenko et al., 2004).

e ***C. pinetorum*** Hub.-Mor.
ISTE 73413.

e ***C. polyclada*** DC.
ISTE 15734, 15735, 41462.
2n = 18 (Garcia-Jacas et al., 1997, Martin et al., 2009).

C. polypodiifolia Boiss.
subsp. ***polypodiifolia***
ISTE 4883, 41059, 57061, 85428, 95251.
2n = 2x = 16 (Garcia-Jacas et al., 1998a).
subsp. ***pseudobehen*** Boiss.
ISTE 94857.
subsp. ***szovitsiana*** (Boiss.) Wagenitz
ISTE 41059, 82740, 99196, 99206.

C. pseudoscabiosa Boiss. & Buhse
subsp. ***araratica*** (Azn.) Wagenitz
ISTE 4844, 26003, 69145, 86688, 86788, 89139.
2n = 20 (Uysal et al., 2009).
subsp. ***pseudoscabiosa***
ISTE 26065, 41303.
n = 11 + 0-7B (Ghaffari, 1999).

C. pterocaula Trautv.
ISTE 31003.
2n = 2x = 36 (Garcia-Jacas et al., 1998a).

e ***C. ptosimopappa*** Hayek
ISTE 49938, 52164, 62077, 73319, 93308, 93309, 93318, 93319, 93424, 97098.
2n = 18 (Koçyiğit and Bona, 2013).

e ***C. ptosimopappoides*** Wagenitz
ISTE 43290.

C. pulchella Ledeb.
ISTE 478,479, 20308, 20332.
2n = 24 (Hellwig, 1994).

C. pulcherrima Willd.
e var. ***freynii*** (Sint.) Wagenitz
ISTE 50109.
var. ***pulcherrima***
ISTE 18319, 31076, 33411, 33479, 33488, 33832, 35723, 60723, 69226, 69288, 87131, 87260, 89152, 89162, 89178, 89187, 89194, 89209, 89487, 89905, 91144, 93804.

C. pullata L.
ISTE 5263.
2n = 11_{II} (Carr & al. 1999).

e ***C. pyrrhoblephara*** Boiss.
ISTE 12889, 58511, 60383, 60386, 85028, 86408, 86520, 86608, 89125, 94010, 94239, 97017, 99204.

C. regia Boiss.
ISTE 45500.

e ***C. reuterana*** Boiss. var. ***phyrigia***
Bornm.
ISTE 4301, 29296, 70424.
e var. ***reuterana***
ISTE 29172, 44837.

C. rhizantha C.A. Meyer
ISTE 480, 23144, 23169, 82649, 86084, 87318, 88543, 94086, 94283, 95171, 95189.
2n = 2x = 16 + 0-6 B (Garcia-Jacas et al., 1998a).

C. rigida Banks & Sol.
ISTE 20040, 93430.
2n = 16 (Romaschenko et al., 2004).

C. rupestris L.
ISTE 3281.
2n = 20 (Slijak-Yakovlev et al., 2008).

C. salicifolia Bieb. ex Willd.
subsp. ***salicifolia***
ISTE 21265, 23364, 33202, 76875.
2n = 22 (Tonian, 1980).
subsp. ***abbreviata*** C. Koch
ISTE 86101, 87224, 87342, 89192.

e ***C. saligna*** (C.Koch) Wagenitz
ISTE 41231, 46752, 58053, 64277, 85784, 85804, 94909, 97125.

C. salonitana Vis.
ISTE 11736, 13517, 13818, 15685, 22949, 30439, 32192, 33023, 42476, 42483, 46986, 51721, 59682, 67201, 67408, 92311, 96414, 96892, 100893.
2n = 2x = 20 (Bancheva and Greilhuber, 2006), **2n** = 20 (Lungeanu, 1975).

e ***C. schischkinii*** Tzvelev
ISTE 69226, 93425.

e ***C. sclerolepis*** Boiss.
ISTE 18245, 75283.
2n = 18 (Uysal et al., 2009).

e ***C. scopulorum*** Boiss. et Heldr. var. ***scopulorum***
ISTE 9688.
2n = 20 (Hellwig, 1994).

e ***C. sessilis*** Willd.
ISTE 90788, 93835.

C. simplicicaulis Boiss. & Huet
ISTE 19936, 43044, 50154, 67032, 67039, 69354, 79434, 93775.

e ***C. sipylea*** Wagenitz
ISTE 46033.

e ***C. sivasica*** Wagenitz
ISTE 88643, 99195, 99197, 99199.
2n = 18 (Bal et al., 1999).

C. solstitialis L. subsp. ***solstitialis***
ISTE 13649, 22719, 23476, 23602, 26264, 26699, 32660, 36138, 37937, 38501, 40186, 40414, 40583, 41627, 46980, 47054, 51482, 52203, 55195, 59271, 64503, 68186, 71007, 71523, 72754, 73018, 74150, 77343, 78035, 83077, 83624, 84397, 85512, 87175, 92984, 99174.
2n = 16 (Georgiadis and Christ.,1984, Bancheva and Greilhuber, 2006).

C. spectabilis (Fisch. et Mey.) Schultz Bip. var. ***spectabilis***
ISTE 79717.

C. sphaerocephala L. subsp. ***sphaerocephala***
ISTE 79467.
2n = 44 (Dambolt and Matthas, 1975).

C. spicata Boiss.
ISTE 73315, 93301, 93302.

C. spinosa L. var. ***spinosa***
ISTE 7801, 10487, 11410, 14773, 40350, 51646, 67426, 68193, 69785.
2n = 36 (Georgiadis, 1983).

C. stenolepis Kerner
ISTE 2511, 7854, 14573, 15956, 15967, 18390, 23575, 30691, 30829, 30852, 31160, 42478, 45512, 45975, 67207.
2n = 2x = 22; **2n** = 4x = 44 (Bancheva and Greilhuber, 2006).

C. stevenii Bieb.
ISTE 69150, 84496, 86093.

e ***C. tchihatcheffii*** Fisch. & Mey.
ISTE 6975, 57974.

2n = 20 (Gömürgen and Adıgüzel, 2001).

C. thirkei Schultz Bip.
ISTE 9350, 24052, 24307, 24453, 27990, 44470, 44100, 44342, 44535, 48914, 49036, 60180, 62932, 69724, 98451.
2n = 2x = 20 + 1B (Bancheva and Greilhuber, 2006).

C. thracica (Janka) Hayek
ISTE 45501, 72810.
2n = 18 (Constantinidis et al., 2002).

C. triumfettii All.
ISTE 450, 451, 452, 4274, 5838, 6972, 12799, 13398, 15231, 19987, 25161, 25986, 28326, 28584, 28631, 28812, 29157, 29411, 32289, 35003, 35137, 35330, 35587, 35763, 36192, 36848, 36973, 37109, 37131, 37236, 37394, 38032, 40829, 42656, 42743, 42875, 43338, 46612, 48318, 48919, 50607, 50955, 50995, 51005, 51020, 51162, 52685, 54046, 54058, 54064, 54187, 55958, 57904, 58841, 66164, 68305, 69141, 70550, 71182, 75497, 81527, 84308, 85549, 85569, 87004, 87303, 87915, 88013, 89265, 89362, 89485, 89490, 89529, 89564, 89733, 90285, 90296, 91762, 91879, 91935, 94648, 95140.
2n = 2x = 22 (Bancheva and Greilhuber, 2006); 22 + 0-1B (Dambolt and Matthas, 1975).

C. uniflora Turra
ISTE 477.
2n = 40 (Georgiadis and Christ., 1984; Martin et al., 2009); 20 (Gardou, 1975).

e ***C. urvillei*** DC. subsp. ***armata*** Wagenitz
ISTE 4666, 12801, 34998, 35745, 37947, 38635, 48945, 50891, 63074, 69522, 78890, 81499, 82846, 85098, 93296, 93297.
2n = 20, 40 (Georgiadis and Christ., 1984), **2n** = 20, **n** = 10 (Gardou, 1975).

e subsp. ***hayekiana*** Wagenitz
ISTE 69513.
2n = 40 (Gardou, 1975).

e subsp. ***nimrodis*** (Boiss. & Hausskn.) Wagenitz
ISTE 93426.

e subsp. ***stepposa*** Wagenitz
ISTE 11468, 22374, 25508, 25978, 32725, 35464, 45606, 44620, 44650, 69674, 70746, 77588, 86221, 92922, 99188.
2n = 20, **n** = 10 (Gardou, 1975).

e subsp. ***urvillei***
ISTE 22715, 26539, 50886, 51333, 51392, 53503, 55947, 70454, 70529, 76531, 99179, 99183.

C. vanensis Wagenitz
ISTE 46619, 86515.

C. virgata Lam.
ISTE 482, 483, 485, 486, 487, 4645, 4907, 9886, 13032, 14087, 14309, 18253, 22128, 22640, 23130, 23203, 26537, 26549, 26901, 30290, 30540a, 30926, 30998, 32542,

32721, 32803, 32922, 33073, 35149, 35418, 36102, 38348, 41189, 41626, 44619, 45511, 47095, 52379, 69599, 72755, 72874, 83738, 85722, 87173, 88699, 89009, 91265, 99176, 99178, 99182, 99189, 99193, 99211, 100989.
2n = 18, 36 (Garcia-Jacas et al., 1997, Martin et al., 2009); **n** = 18 (Ghaffari and Chariat-Panahi, 1985).

e ***C. wiedemanniana*** Fisch. & Mey.
ISTE 44691, 93320.

e ***C. woronowii*** Bornm.
ISTE 52559, 89304.

C. xanthocephala (DC.) Schultz Bip.
ISTE 4873.
2n = 30 (Bakhshi Khaniki, 1995); **2n** = 30 + 0-3B (Garcia-Jacas, 1998b).

e ***C. yaltrikii*** N. Aksoy, H. Duman & A. Efe subsp. ***dumanii*** N. Aksoy & A. Efe
ISTE 99427, 99437, 99690.

e ***C. yozgatensis*** Wagenitz
ISTE 25303.

e ***C. zeybekii*** Wagenitz
ISTE 23408, 23552.

C. zuccariniana DC.
ISTE 3282.
2n = 18, x = 9 (Georgiadis, 1983).

In conclusion; ISTE has about 50 % of Turkish *Centaurea* s.l. taxa, and 50 % of them are endemics. 171 *Centaurea* taxa are deposited in ISTE and chromosome numbers of 97 of them are reported, 7 of them are counted in ISTE. Basic chromosome numbers of the genus were reported as x = 6, 7, 8, 9, 10, 11, 12, 13, 15. I expect that this paper will be used a guideline for field and chromosome researchs about *Centaurea*.

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